



70-MHz, 32-bit
microcontroller with
ARM7TDMI-S™ core
LPC210x

Small, ultra-low-cost ARM7-based microcontrollers

These powerful yet cost-effective microcontrollers have up to 32 KB of zero wait-state Flash and up to 8 KB of SRAM. Each has a 10-bit A/D converter with eight channels and multiple serial interfaces, and is available in a package that measures only 7 x 7 mm.

Key features

- ▶ 70-MHz, 32-bit ARM7TDMI-S with AHB/APB interfaces
- ▶ Code Read Protection mechanism to safeguard user code
- ▶ Up to 32 KB of zero wait-state Flash
- ▶ Up to 8 KB of SRAM
- ▶ Very fast Flash programming via on-chip boot loader
- ▶ 10-bit A/D converter with individual result registers
- ▶ Multiple serial interfaces: two I²C, two UART, SPI/SSP
- ▶ Four timers: two 32-bit timers, two 16-bit timers
- ▶ Real-time clock with 32-kHz crystal and battery back-up pins
- ▶ Watchdog timer
- ▶ 32 high-speed I/O ports
- ▶ LQFP48 package (7 x 7 x 1.4 mm)

Applications

- ▶ Backplane server management
- ▶ Serial communications protocol converters
- ▶ Handheld card readers
- ▶ Distributor access and security control
- ▶ ZigBee

The NXP microcontrollers LPC2101, LPC2102, and LPC2103 use a high-performance 32-bit ARM7 core that operates at up to 70 MHz. Each device has up to 32 KB of on-chip Flash and up to 8 KB of on-chip SRAM memory.

In-System Programming (ISP) and In-Application Programming (IAP) software minimize programming time – each 256-byte line takes only 1 ms to program, and a single-sector or full-chip erase takes only 400 ms. Code Read Protection, also known as Flash security, is available to protect the user code.

Each device is equipped with an enhanced 10-bit A/D converter with eight channels and individual result registers.

Multiple serial communications interfaces increase design flexibility, provide larger buffer size, and deliver higher processing power. There are two 16C550 UARTs, two Fast I²C-bus (400 kbps) interfaces, an SPI serial interface (up to 7.5 Mbps), and an SSP serial interface (up to 25 Mbps in master mode).

There are two 32-bit timers with seven combined capture/match channels for pulse measurements and PWM, and two 16-bit timers with three capture and four match channels. Each device also has a Watchdog timer and a real-time clock with a dedicated 32-kHz oscillator and battery back-up pins.

For debugging, each device supports real-time emulation and has an integrated vectored interrupt controller (VIC). Also, for compatibility with existing tools, each device uses the standard ARM test/debug JTAG interface.

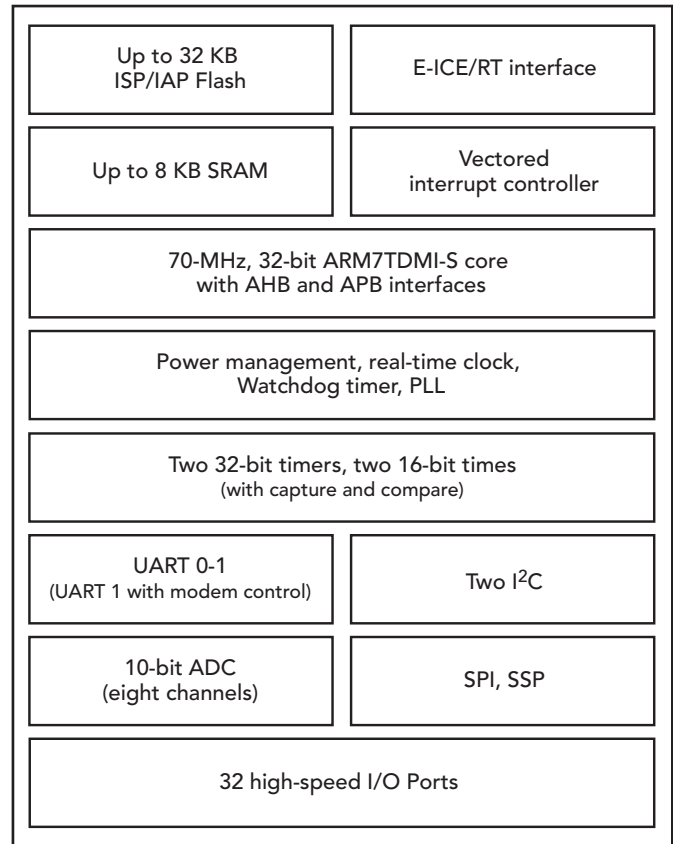
Other features include up to thirty-two high-speed I/O pins that are tolerant to 5 V, and an operating temperature range of -40 to 85 °C.

Each device is packaged in a space-saving 48-pin LQFP that measures only 7 x 7 x 1.4 mm

These ultra low-power devices feature several power-down modes. Power consumption with the real-time clock running and the core powering down is typically 7 µA.

Third-Party Development Tools

Through third-party suppliers, we offer a range of development tools for our microcontrollers. For the most current listing, please visit www.nxp.com/microcontrollers.



LPC210x block diagram

LPC210x selection guide

Type	Memory		Serial interfaces				ADC channels (10-bit)	Packages
	Flash (KB)	SRAM (KB)	I ² C	UART	SPI	SPI/SSP		
LPC2101	8	2	2	2	1	1	8	LQFP48
LPC2102	16	4	2	2	1	1	8	LQFP48
LPC2103	32	8	2	2	1	1	8	LQFP48